

Fig. 1

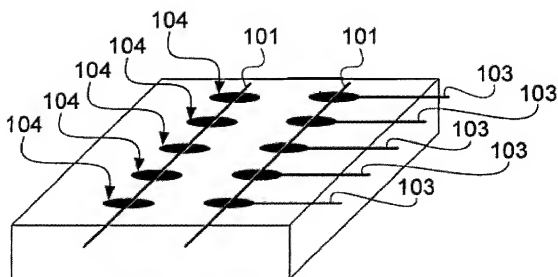


Fig. 2

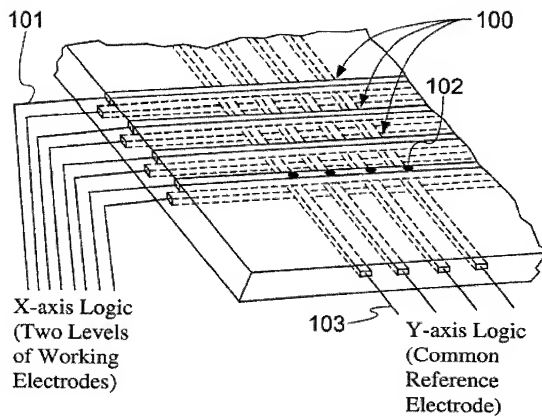


Fig. 3

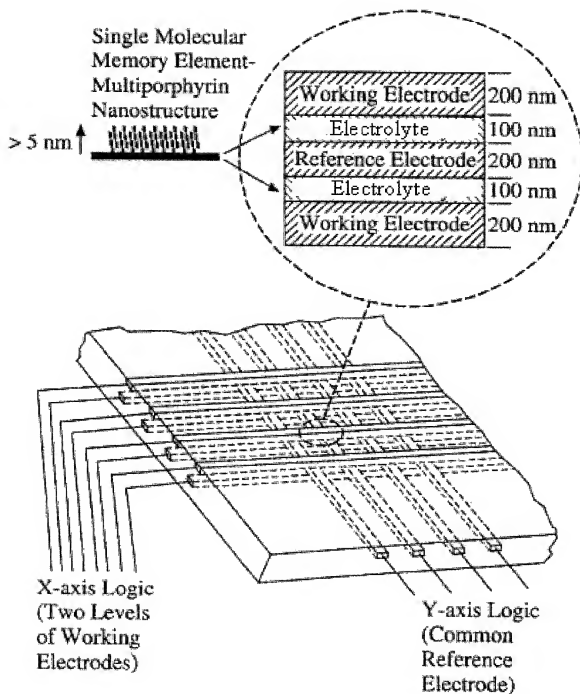


Fig. 4

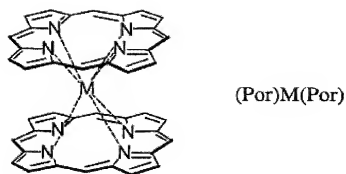
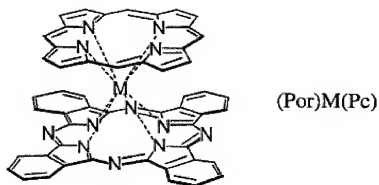
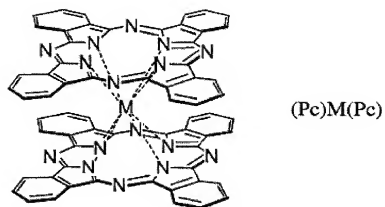


Fig. 5

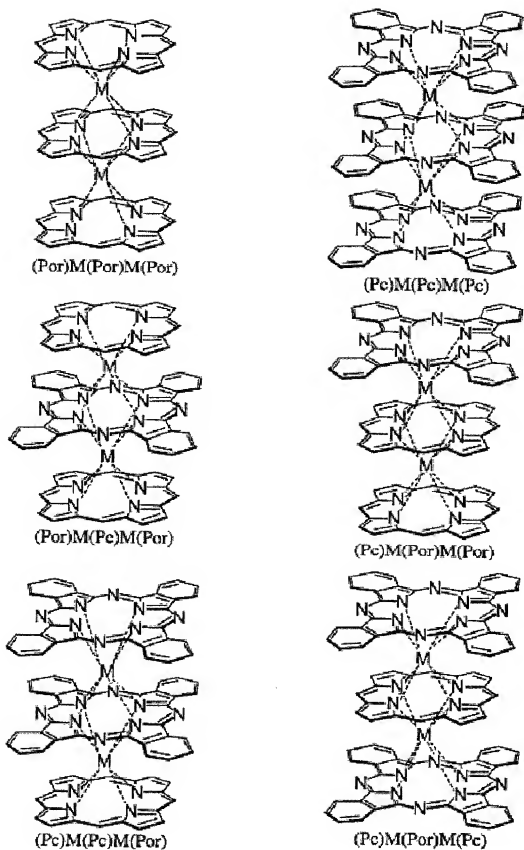


Fig. 6

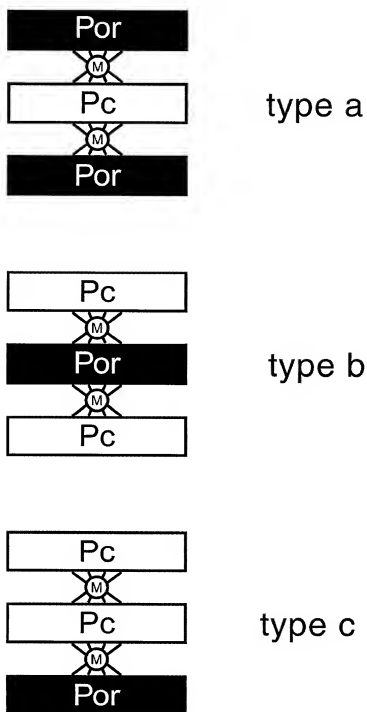


Fig. 7

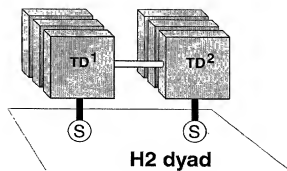
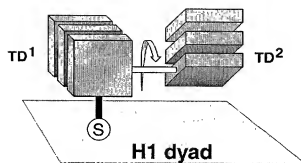
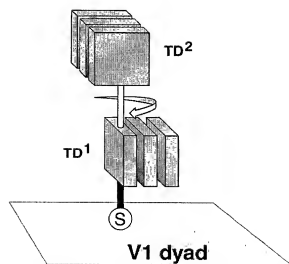


Fig. 8

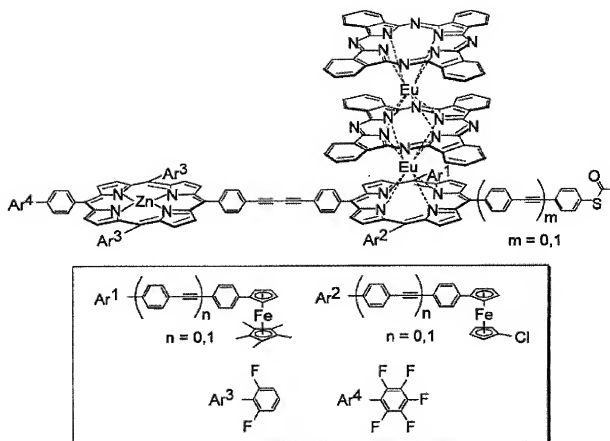
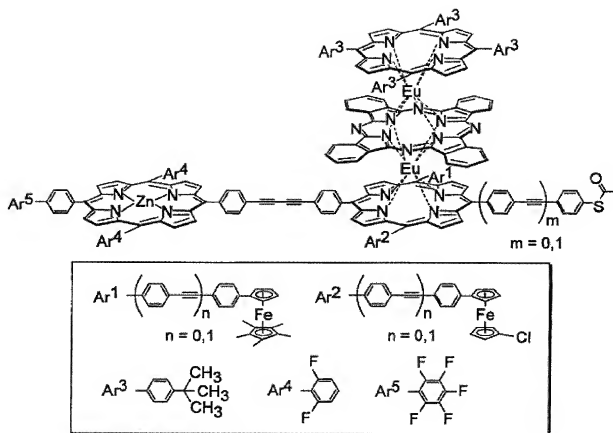


Fig. 9



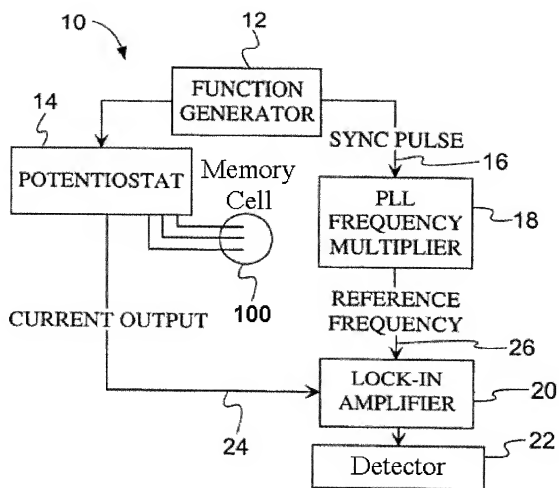


Fig. 11

Computer

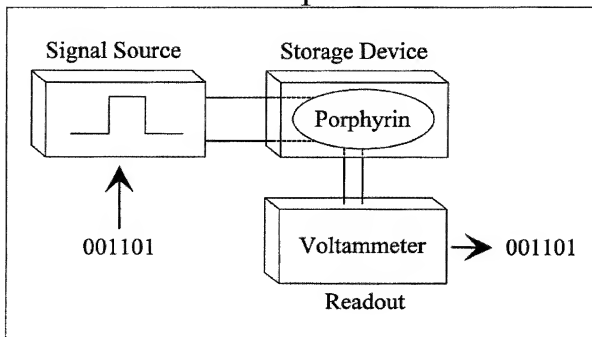


Fig. 12

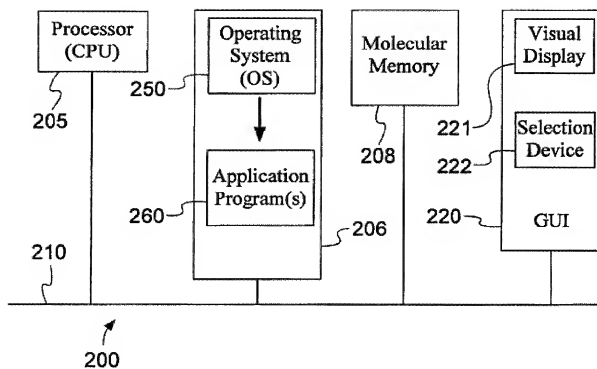


Fig. 13

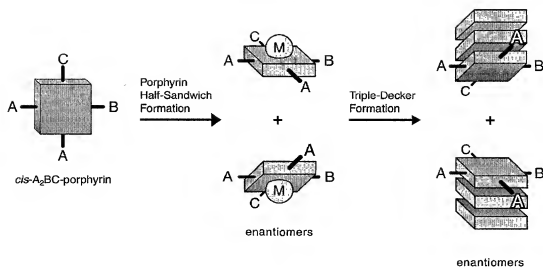
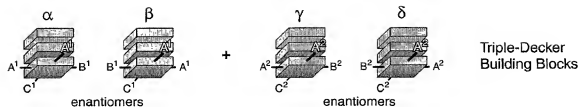
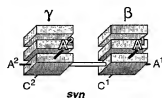
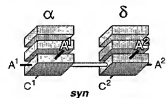


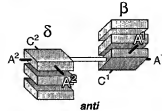
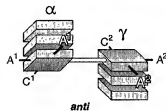
Fig. 14



↓ join B¹ + B² groups



Triple-Decker Dyads



↓ (1) attach thiol linkers
(2) create SAMs

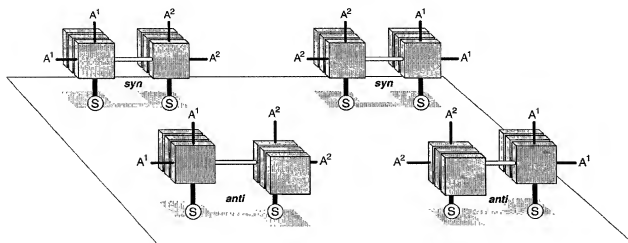


Fig. 15

Scheme 1

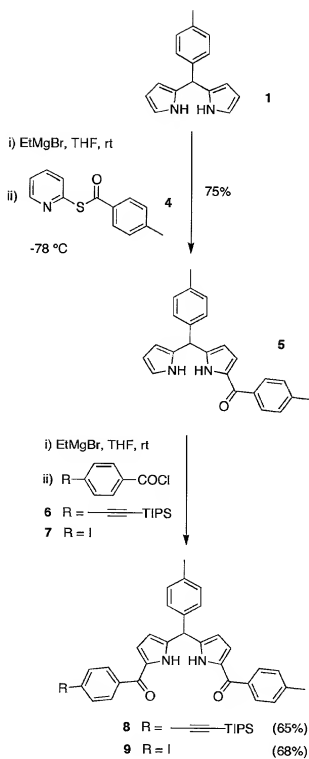
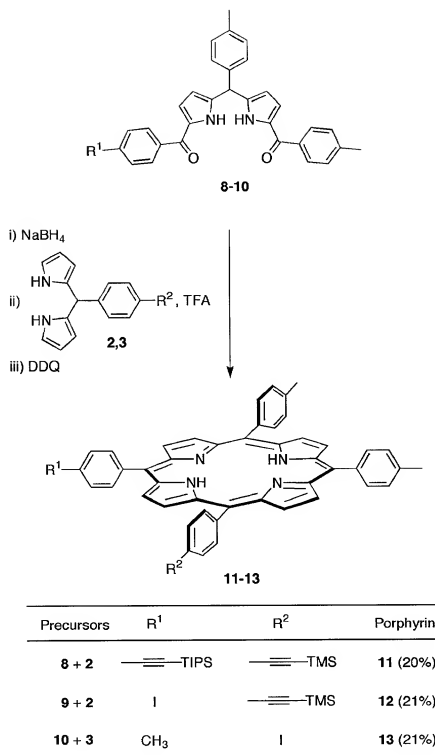
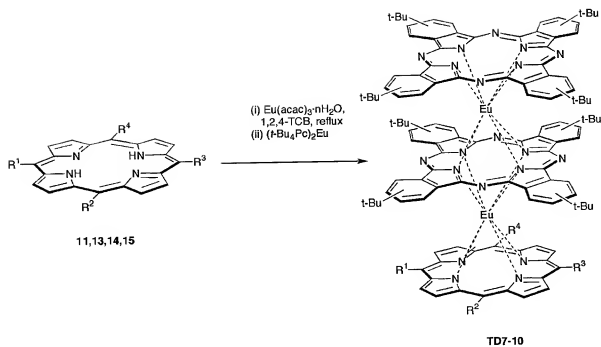


Fig. 16

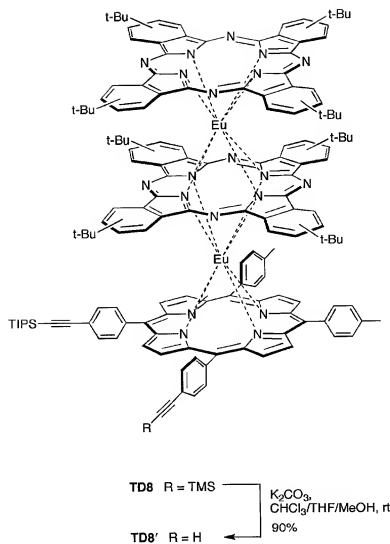
Scheme 2

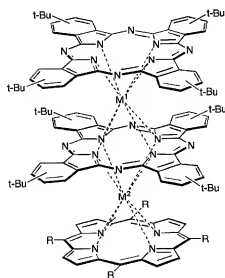
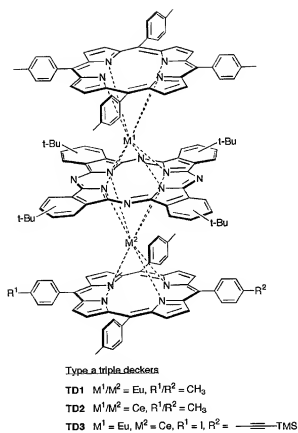
**Fig. 17**

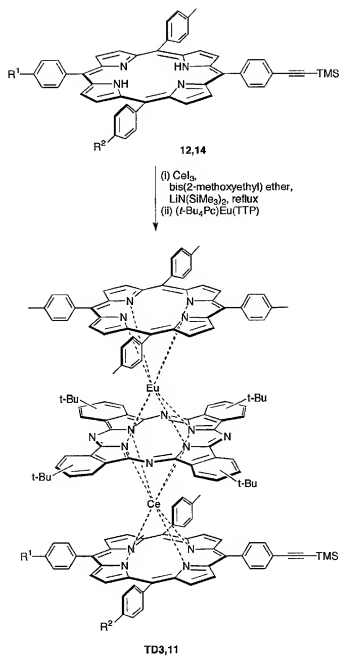


| Porphyrin | R ¹ | R ² | R ³ | R ⁴ | Triple Decker | Yield |
|-----------|------------------|------------------|----------------|------------------|---------------|-------|
| 14 | | <i>p</i> -tolyl | | <i>p</i> -tolyl | TD7 | 74% |
| 11 | <i>p</i> -tolyl | | | <i>p</i> -tolyl | TD8 | 79% |
| 13 | <i>p</i> -tolyl | <i>p</i> -tolyl | | <i>p</i> -tolyl | TD9 | 62% |
| 15 | <i>n</i> -pentyl | <i>n</i> -pentyl | | <i>n</i> -pentyl | TD10 | 25% |

Fig. 18

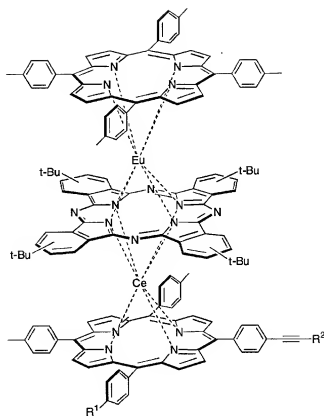
**Fig. 19**

**Fig. 20**



| Porphyrin | R ¹ | R ² | Triple Decker | Yield |
|-----------|-----------------|-----------------|---------------|-------|
| 12 | CH ₃ | I | TD11 | 54% |
| 14 | I | CH ₃ | TD3 | 46% |

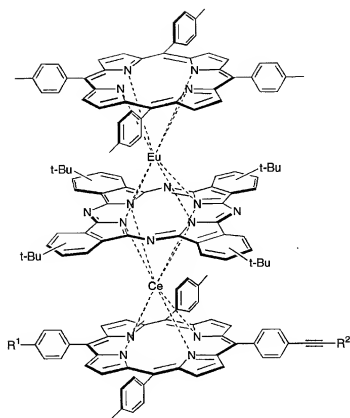
Fig. 21



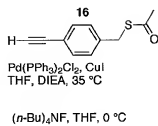
| R ¹ | R ² | Triple Decker |
|----------------|----------------|-----------------|
| I | TMS | TD11 |
| | TMS | AcS-TD11 (57%) |
| | H | AcS-TD11' (66%) |

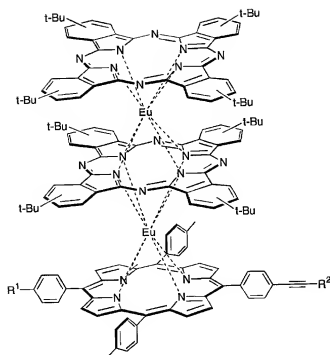
16
 Pd(PPh₃)₂Cl₂, CuI
 THF, TEA, 35 °C
 (n-Bu)₄NF, THF, 0 °C

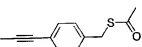
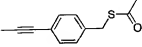
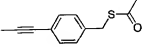
Fig. 22



| R ¹ | R ² | Triple Decker |
|----------------|----------------|-----------------------|
| | TMS | TD3 |
| | TMS | AcS-TD3 (64%) |
| | H | AcS-TD3' (97%) |

**Fig. 23**



| R ¹ | R ² | Triple Decker |
|--|----------------|-----------------------|
|  | TMS | TD7 |
|  | TMS | AcS-TD7 (59%) |
|  | H | AcS-TD7' (89%) |

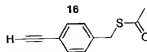
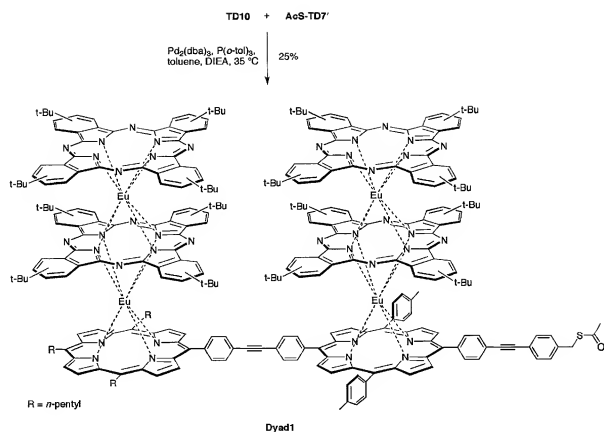
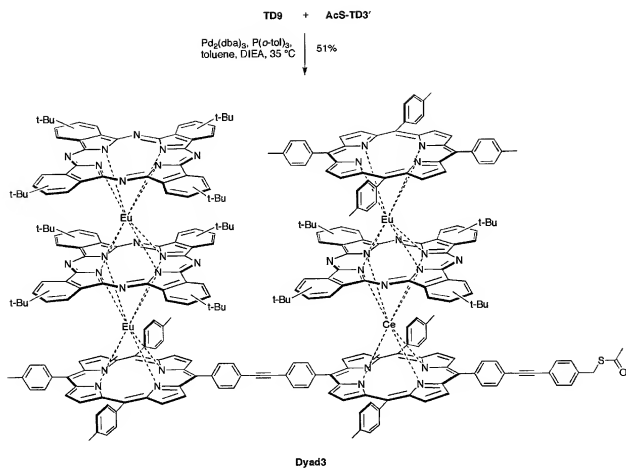
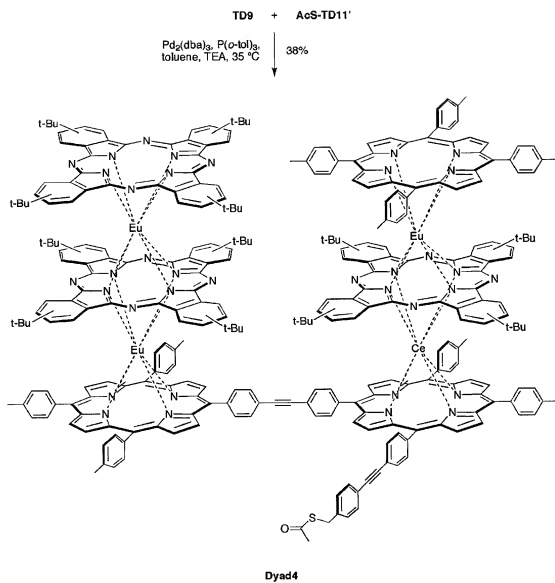

 Pd(PPh₃)₂Cl₂, CuI, THF, DIEA, 35 °C
 (n-Bu)₄NF, THF, 0 °C

Fig. 24

**Fig. 25**



**Fig. 27**

**Fig. 28**

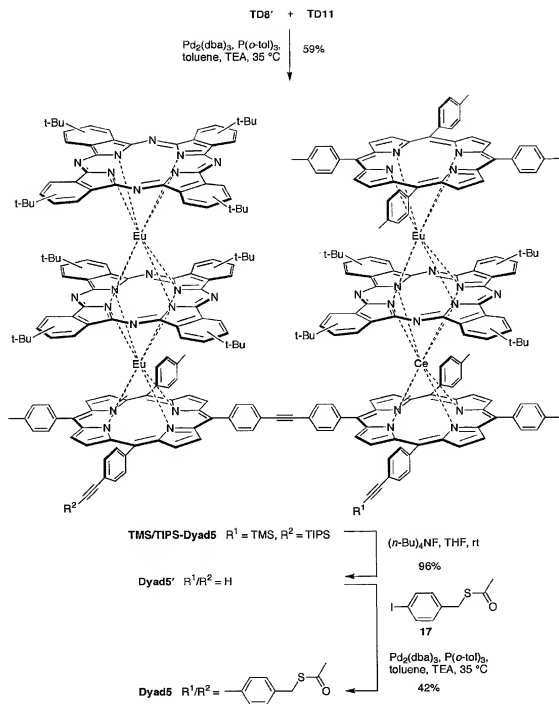


Fig. 29

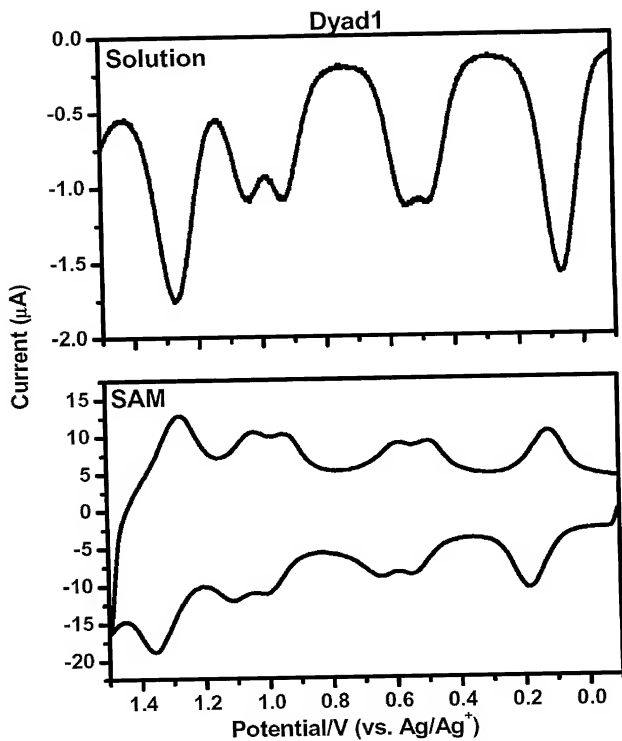
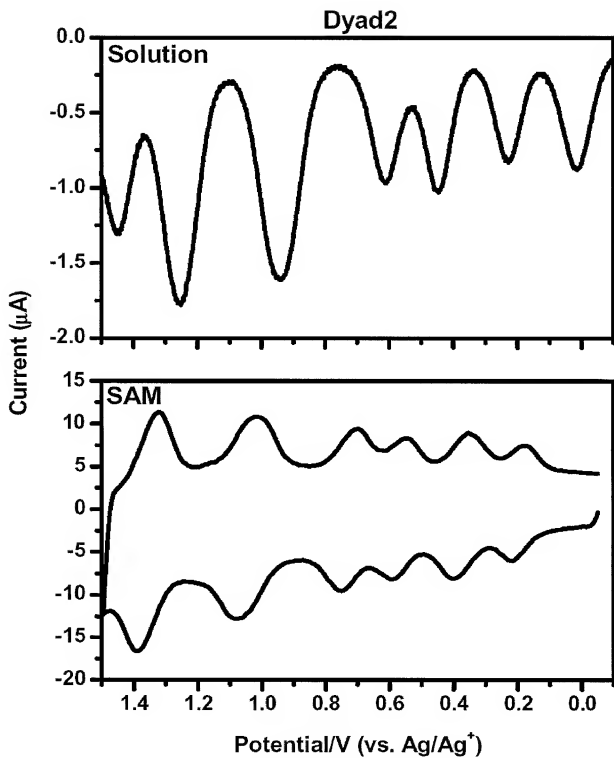


Fig. 30

**Fig. 31**

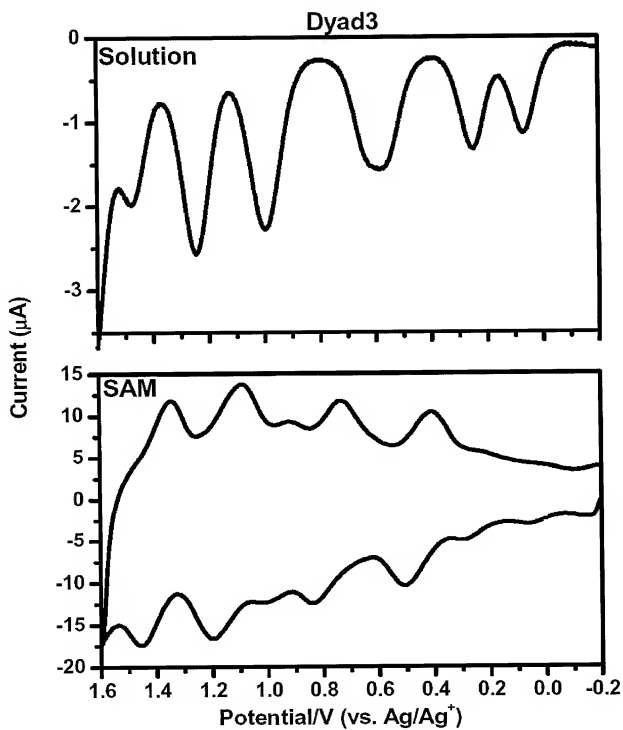


Fig. 32

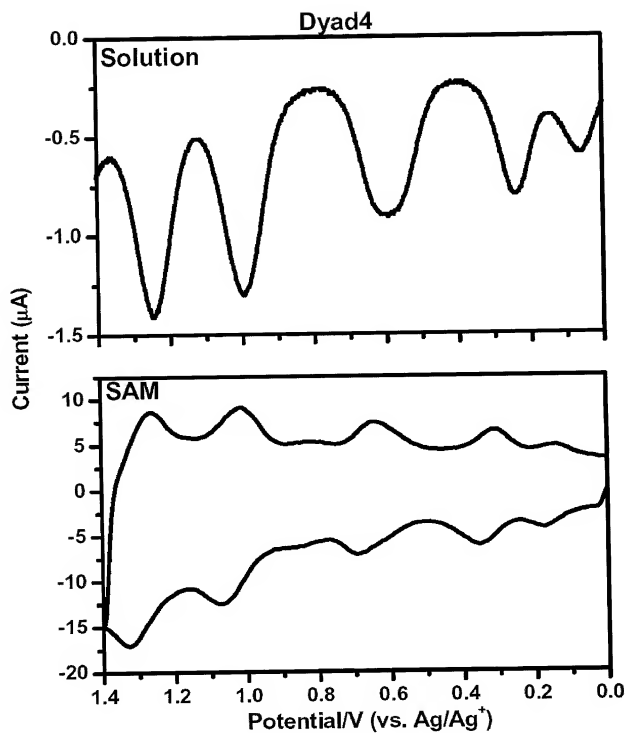


Fig. 33

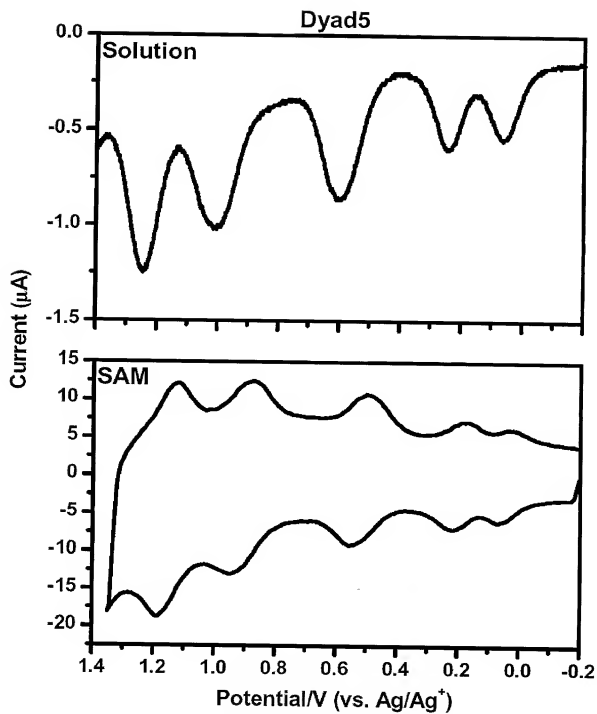


Fig. 34